

Application No.: 10/089,532Docket No.: H0681.0007**REMARKS**

Claims 20-37 and 39 are in the case. Claim 38 was canceled. New claim 39 was added. Claims 24, 26, 28, 31, 34 and 37 are allowed. Claims 23, 24 and 36 were amended. Reconsideration of the subject application in view of the above amendment and the following remarks is hereby respectfully requested.

Claims 20-22 and 38 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,001,493 to *Patin et al.* for reasons set forth on page 2 of the Office action. This rejection is respectfully traversed.

Claim 20 recites a dual-band microstrip antenna comprising a ground member and a patch structure. The patch structure comprises discrete first and second portions which are generally parallel to each other and spaced apart from the ground member. The patch structure and the ground member are configured so that the antenna exhibits first and second resonant frequency ranges by electromagnetic interaction between the patch structure and the ground member when the antenna is active. The conduction surfaces of the portions of the patch structure are shaped to substantially correspond to patterns of current flow which were detected in the conduction surfaces when the antenna is active before such shaping.

Patin et al. discloses a multiband gridded focal plane array antenna. The antenna includes a metallization pattern providing a first set and a second set of conductive edges having a first length and a second length, respectively. The first and second sets of conductive edges are separately fed to provide the first and second simultaneous output beams at first and second operating frequencies.

Applicants respectfully submit that the claimed invention is not obvious over *Patin et al.* As is illustrated by the current pattern in Figure 3 of the subject application, applicants found that the dark areas in Figure 3 represent areas of negligible current flow. Applicants also found that the dark areas are areas of conductive material which can be removed with only a resultant negligible effect on current flowing at the facing edges of the patches 32 and 34. The patch structure in the claimed invention is formed to correspond to the patterns of current flow detected in the patch structure. For example, a portion of the patch 32 in Figure 2 is not present in Figure 5.

The claimed invention is capable of reducing the amount of conductive material required to form an antenna element. This can be attained by measuring current in a patch element before shaping, and then shaping the patch element so that all of the conductive surface of the resulting shaped patch element carries non-negligible current.

Applicants respectfully disagree with the assertion that Figure 2(b) of *Patin et al.* illustrates the conductive elements being "shaped to correspond with current flow". Applicants

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respectfully submit that *Patin et al.* does not discuss about patterns of current flow in the conduction surfaces. Nor does *Patin et al.* teach or suggest that the conducting surfaces of the patch structure are shaped to correspond to the patterns of current flow detected in the patch structure. In *Patin et al.*, the lengths of the edges 18, 20 and 24 are critical because each length is associated with a particular wavelength. Therefore, it appears that no conductive material is removable, since the lengths of all of the edges are associated with wavelength radiating from the antenna.

Moreover, applicants respectfully submit that one skilled in the art would not be motivated to modify *Patin et al.* to arrive at the claimed invention. Among other reasons, *Patin et al.* relies on the dimensions of both outside and inside linear conductive edges for radiating wavelengths. Any modification to such conductive edges would destroy the technical scheme of *Patin et al.*


In view of the above, applicants respectfully submit that the claimed invention patentably distinguishes over *Patin et al.* Accordingly, the subject rejection is believed to be overcome. The Examiner is hereby respectfully requested to withdraw the same.

New claim 39 was added which recites that "non-interacting edges" of the conduction surfaces of the portions of the patch structure are shaped to substantially correspond to patterns of current flow which were detected in the conduction surfaces when the antenna is active before such shaping. As illustrated in Figure 5, "non-interacting edges", i.e., the lateral edges of the patch 32, are reshaped in the antenna of the present invention. Applicants respectfully submit that the present invention as recited in new claim 39 patentably distinguishes over *Patin et al.*

No fee is believe to be due for this Amendment. Should any fee be required, please charge such fee to Deposit Account No. 50-2215.

Respectfully submitted,

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